State of California
Department of Motor Vehicles

EVALUATION OF THE DELEGATED DRIVE TEST PILOT PROGRAM: TECHNICAL APPENDIX

REPORT TO THE LEGISLATURE OF THE STATE OF CALIFORNIA

IN ACCORD WITH SENATE BILL 1390 CHAPTER 699, 1994 LEGISLATIVE SESSION

DECEMBER 1998

GRAY DAVIS
Governor

MARIA CONTRERAS-SWEET, Secretary
Business, Transportation and Housing Agency

ED SNYDER
Acting Director

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	December 1998	

4. TITLE AND SUBTITLE

Evaluation of the Delegated Drive Test Pilot Program: Technical Appendix

5. FUNDING NUMBERS

6. AUTHOR(S)

Scott V. Masten

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

California Department of Motor Vehicles
Research and Development Branch
P.O. Box 932382
Sacramento, CA 94232-3820

8. PERFORMING ORGANIZATION REPORT NUMBER

CAL-DMV-RSS-98-178

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT

12b. DISTRIBUTION CODE

13. ABSTRACT (Maximum 200 words)

This study evaluated the safety impact of allowing driving schools to administer the Driving Performance Evaluation (DPE) to provisional license applicants. The results of the driver record comparisons between provisional applicants tested by the driving schools and those tested by DMV did not indicate a statistically significant difference in the 6-month post-licensure accident or citation rates for the groups. Unfortunately, inadequate sample sizes and the potential biases present in the study preclude drawing any firm conclusions regarding the comparative safety impact of private versus DMV testing. However, the results of the scoring consistency and reliability analyses are more interpretable and less subject to these problems. The comparisons of scoring consistency between driving school and DMV examiners indicates that the driving school examiners followed the DPE scoring criteria less stringently than did the DMV examiners, and were far more lenient, having passed many applicants who subsequently failed the drive test at DMV. Although these findings also require qualification, it is very unlikely that differences of the magnitude observed can be attributed to bias alone. The low volume of subjects, which was a major reason for the low statistical poser of the analyses, may indicate that the market for delegated testing is small, both within the general public and the driver training industry itself.

14. SUBJECT TERMS	15. NUMBER OF PAGES
drive test, privatize, driving schools	28
	16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified	Unclassified	

ACKNOWLEDGMENTS

This project was conducted under the general direction of Raymond C. Peck, Research Chief. The study was designed and supervised by Robert A. Hagge, Research Manager I. Rileyne Brown, Graduate Student Assistant, assisted in screening and coding data, making call-backs to field offices and driving schools, and documenting data collection problems, and also served as liaison to the Field Office Division in the training of field office technicians in the data collection procedures. Mike Gebers, Dave DeYoung, and Helen Tashima, Research Program Specialist Is, provided technical advice and data on the statistical analyses. John Rooney, Bruce Allen, Linda Stanley, and Herb Brown, Manager IIIs, helped by offering comments, suggestions, and assistance in the development of data collection procedures and in efforts to achieve compliance by field offices and driving schools with the study requirements. Lydia Steeves, Information Systems Technician, created the data entry programs and supervised key-entry. Debbie McKenzie, Associate Governmental Program Analyst, proofread and compiled the final report.

Report Author:
Scott V. Masten, Research Program Specialist I, Principal Investigator

EXECUTIVE SUMMARY

Introduction

- This report presents comparisons of driving records for provisional license applicants tested at the pilot driving schools and at DMV from June 1996 through June 1998. Also included are comparisons of scoring consistency measures between the driving school and DMV examiners, and the numbers and fail rates of first-attempt applicants tested by the driving schools and by DMV.

- Several limitations in the study compromise the interpretability and validity of the findings. These limitations include nonrandom assignment of subjects, limited data reporting, and low subject volumes.

Methods

- Scoring consistency between the driving school and DMV was evaluated by comparing the internal-consistency reliabilities computed from the driving school and field office Driving Performance Evaluation (DPE) score sheets, and also by comparing the test-retest results for applicants tested by the driving schools and subsequently retested by DMV.

- The first set of driver record comparisons sought to determine if simply offering the delegated test to one group and not the other had an effect on traffic safety. This was accomplished by comparing the 6-month post-licensure accident and citation rates for subjects who qualified for a school test with those for subjects who did not

qualify for a school test. This was considered the most experimentally straightforward analysis of the program's impact because the subjects in each group were randomly assigned based on whether they had an odd or even driver license number. A difference between the accident and citation rates for these groups would suggest that the delegated-test offer had an impact on traffic safety. In addition, because the group offered a delegated test included the subjects who accepted the offer, any difference between the groups would also reflect any effect of delegated testing itself.

- The purpose of the second set of driver record comparisons was to evaluate the effect of the delegated test itself on traffic safety. This was accomplished by comparing the 6-month post-licensure accident and citation rates for subjects who chose a school drive test with those for subjects who either chose or were required to take a DMV drive test. A difference between the accident and citation rates for the groups would indicate that the type of drive test taken had an impact on traffic safety, although this analysis was subject to any effects of self-selection bias.

Results

- Of the 30,000 school-test subjects (of which 3,000 would have been retested) and 45,000 DMV-test subjects that were projected for the study, 6,216 school-test, 214 retest, and 20,704 DMV-test subjects were received and evaluated.

- The internal-consistency reliability for the driving school DPE was .49 ($n = 1{,}627$) with the freeway items included and also .49 ($n = 4{,}234$) with the freeway items deleted. The coefficient for the field office DPE was .66 ($n = 392$) with the freeway items included and .64 ($n = 392$) without the freeway items. The differences between the school and field office DPE reliabilities are statistically significant ($p < .001$). These results suggest that the school examiners were less diligent and less consistent in scoring road test performance than were DMV examiners.

- The difference in the pass/fail classifications made by the driving school and DMV examiners for subjects who were tested by the driving schools and subsequently retested by DMV are statistically significant ($p < .001$). Although the driving school and DMV examiners reached the same decision for 80.4% of the applicants, in 15.4% of the cases the DMV examiners failed the subjects after the driving schools passed them, and in 4.2% of the cases the subjects passed the DMV test after having failed the school test.

- The driving schools administered a delegated test to about 40% (5,995) of the 14,714 eligible applicants recorded on the school logs. (This number greatly overestimates the percentage of eligible provisional license applicants in Southern California who were tested by the schools, because the driving schools were permitted to test all provisional applicants in the region, not just those trained by the pilot schools. The percentage of total eligible provisional applicants in the Southern California population who were tested during the 2-year pilot is estimated to be less than 10%.)

- The statistically-adjusted 6-month post-licensure accident and citation rates for subjects who qualified to take a delegated test (odd instruction permit number) and

for subjects who did not qualify (even instruction permit number) were not significantly different from one another.

- The statistically-adjusted 6-month post-licensure accident and citation rates for all subjects given a school drive test and all subjects given a DMV drive test were not significantly different.

Discussion

- Although this study found no evidence of a difference between the 6-month post-licensure accident or citation rates of provisional licensees administered a drive test by the pilot schools and applicants administered a drive test by DMV, no definitive conclusions regarding the program's impact on safety can be inferred from these findings because of the limitations and potential biases present in the study.

- The lower reliability of the driving school test and the results of the test-retest analysis suggest that the driving school examiners less rigorously followed the DPE scoring criteria than did the DMV examiners. The school examiners were far more lenient, having passed many applicants who subsequently failed the drive test at DMV. However, the limitations and potential biases in the study require that these findings be interpreted with caution.

- The low volume of school-test subjects and the small number of driving schools that chose to participate in the pilot suggests that there may not be a sizable market for privatizing the drive test, at least under the program constraints imposed by the legislation and departmental regulations.

- The increased total cost to provisional applicants electing to be tested by a school was also a likely factor in the decreased participation. Because applicants had to pay the usual DMV license application fee in addition to a $5 certificate of driving skill fee and any money they paid to be tested by the driving schools, there was no obvious financial incentive for applicants to take a school test. In addition, because school-test applicants had to go to DMV to complete their licensing transactions anyway, there also existed little or no substantial time-saving advantage in taking a school test.

Recommendations

Any reconsideration of privatizing the road test should reflect a broad array of policy-analytic considerations. A proper evaluation requires rigorous adherence to classical experimental design principles and a proper measurement of benefits and costs. The specific model evaluated through Senate Bill 1390, Calderon (CH. 699, Stats. 1994), does not appear to offer much potential in terms of benefit-cost tradeoffs.

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

APPENDICES

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

Background

Senate Bill 1390, Calderon (CH. 699, Stats. 1994), authorized the Department of Motor Vehicles (DMV) to conduct a 2-year pilot program beginning January 1, 1996 that would delegate authority to selected driving schools to administer behind-the-wheel drive tests to provisional driver license applicants who successfully complete the approved courses of instruction. The bill restricted the number of applicants who could be tested by the driving schools to 15,000 each year of the pilot. It further required the department to submit to the Legislature a report evaluating the pilot program by January 1, 1999. This report was required to include comparisons of driving records for applicants tested at the driving schools and at DMV. Assembly Bill 3003, Pringle (CH. 922, Stats. 1996), extended the pilot program an additional year (until January 1, 1999), but failed to extend the due date for the report.

Changes in the Study Design

The initial research design involved randomly assigning applicants who completed behind-the-wheel driver training and expressed interest in taking a delegated test to take either a DMV or school drive test. Only provisional license applicants who were taking a drive test in California for the first time, had an original copy of their driver training certificate, and were not previously licensed out-of-state were to be included in the study. Several months after the pilot program began, the driving schools requested and were granted approval to eliminate the random assignment requirement. The change in the way subjects were assigned enabled the schools to recruit and test more applicants. Unfortunately, as explained below, the change in assignment procedures potentially introduced sources of bias in the composition of the groups.

Study Limitations

There were several limitations in the study that limit the interpretability and validity of the findings. The first limitation is the lack of random assignment of the study participants to the various testing groups, as noted above. There is great potential for self-selection bias whenever study subjects are not randomly assigned to treatment conditions. Those who chose to take a delegated test are likely to differ from those who were eligible to take one but chose not to, and these extraneous factors may be related to subsequent accident risk (the criterion measure). Although various bias checks and statistical controls were built into the modified study design to account for self-selection bias, it is still very likely that the school-test group differed from the DMV-test group in ways that confound the study findings.

A second limitation is the extremely low volume of subjects. Although the legislation allowed the driving schools to test 45,000 provisional license applicants over the 3-year pilot (15,000 per year), only a small fraction of that number of delegated tests were ever given. The low volume of delegated tests given by the schools severely limits the statistical power of the traffic safety and test-retest analyses. Statistical power in the context of this report is the ability to detect a meaningful difference in the accident, citation, or pass/fail rates for the driving school and DMV test groups when a difference does indeed exist. Hence, even if the groups did differ in their rates, the

extremely low statistical power makes it highly unlikely that the differences would have been detected by the statistical analyses.

A third limitation of the study stemmed from reporting deficiencies. Although a handful of offices consistently submitted accurate study data to DMV Headquarters, many offices did not follow the study procedures in a manner that produced usable data. In addition, a substantial number of study subjects were never identified and logged on study data sheets when they were tested and/or licensed at the DMV field offices. It therefore became necessary to use the data from the school logs to form the study groups. Unfortunately, the drive test date for DMV-tested subjects was not available from the school logs, requiring that date of licensure be used to identify the start of the follow-up period for the safety impact evaluation. The field office logs were still used to identify subjects for the test-retest analysis because the retest information was only contained on these forms.

The above limitations require that the study findings be interpreted with considerable caution.

METHODS

Selection of Driving Schools

It was originally intended to randomly select a total of 30 driver training providers in Los Angeles, Orange, and San Diego counties to administer the 30,000 delegated drive tests permitted in the initial legislation. Only providers that employed at least four full-time driver training instructors and had been in business for at least 2 years were to be considered for the selection. However, only 24 schools of this size applied to participate and also met the legal requirements of the program, and some of these schools were eliminated for other reasons. Therefore, to get adequate school participation it became necessary to also include schools with three full-time instructors. Even with the inclusion of these smaller schools, only 24 met all of the eligibility requirements and enrolled in the pilot program. A year and a half after the pilot was implemented, only 14 of these schools were still actively participating in the program. (The other 10 schools either voluntarily withdrew from the program, or lost their eligibility for a variety of reasons.) An effort was therefore made to recruit additional driving schools, including those with only two full-time driving instructors, to increase the volume of delegated tests given. This resulted in 11 additional schools being added to the program, which increased the total number of participating driving schools to 25. With the addition of these schools the program spread to Ventura, San Bernardino, Riverside, and Imperial counties as well. The fact that so few driving schools could be found that were willing and eligible to participate in the program was a contributing factor to the low subject volumes mentioned earlier.

Use of the Driving Performance Evaluation

It was decided that delegated testing would be limited to administration of the Driving Performance Evaluation (DPE) in Southern California because this drive test has been shown to be more comprehensive, reliable, and valid than the traditional drive test still

being used in Central and Northern California (Hagge, 1995; Romanowicz & Hagge, 1995). The DPE included a freeway testing component during the first year of the program, although this was subsequently dropped from the DPE to reduce testing time. The DPE was being used in 27 Southern California DMV field offices at the beginning of the delegated pilot, and 37 additional DMV field offices were converted to the DPE during the pilot, making a total of 64 DPE offices by April 1997. The provisional applicants who were trained and/or tested by the participating driving schools were required to go only to DPE offices for any additional processing for a driver license that may have been necessary. This restriction was imposed to ensure that all study subjects were receiving the DPE.

Study Design

As indicated earlier, the original experimental study design was modified 6 months after the pilot was implemented to accommodate the driving schools' concerns. The modified design permitted the driving schools to offer a drive test to any eligible provisional license applicant who had an instruction permit number ending with an odd digit (1, 3, 5, 7, 9). (The instruction permit number becomes the applicant's driver license number when all licensing requirements are satisfied.) Those with an instruction permit number ending with an even digit (0, 2, 4, 6, 8) were required to take all drive tests at DMV. The modified design allowed the driving schools to inform the provisional applicants at the time their instruction permits were issued whether they were eligible to take a delegated test, making it possible to market driver training and a delegated drive test as a "package" deal. Three study groups were created from this modified group-assignment methodology: (1) applicants who were required to take all drive tests at DMV, (2) applicants who were eligible and chose to take a school drive test, and (3) applicants who were eligible to take a delegated test, but chose to take a DMV drive test instead. The driving schools were additionally permitted to give drive tests to eligible provisional applicants whom they did not train.

There were also two subgroups of school-test subjects who were randomly selected to be retested at a DMV field office. DMV field offices were to randomly select every tenth applicant who passed a delegated test to take a DMV retest when they came to DMV to complete licensure. In addition, the driving schools were to randomly select 10% of the applicants who failed a school test to be retested by a DMV field office within 5 working days of the failure. The procedures used to select these two groups of retest subjects are discussed below.

Data Collection Procedures

Data collection at the driving schools was accomplished through the use of a Delegated Drive Test Subject Log Sheet (see Appendix A). Test-related information for each first-attempt subject tested by a pilot school, including those trained by another school, was to be entered on the log sheet kept by each driving school. Each driving school also recorded on the log sheet the instruction permit number, name, current date, and driver training completion date for every applicant who completed driver training or was tested at the school during the pilot period. The driver training graduates were to be entered on the log immediately upon their completion of training. The driving schools were to forward completed logs and first-attempt DPE score sheets to DMV Headquarters on a weekly basis. Applicants who failed a delegated test and had a zero as the second-to-last digit of their instruction permit number were to be identified by

the driving schools as mandatory DMV retest subjects. The driving schools were to immediately call the nearest DMV field office and schedule a DMV retest for these subjects within 5 working days of the test failure to prevent the subjects from receiving too much additional driving practice before the DMV retest. The driving schools were also to write a code on the driver training completion certificate (OL 238) for each applicant they tested or trained indicating whether the subject was tested by the school, was to take a first-attempt DMV test, or was required to be retested by DMV. These codes were to be used by the DMV field offices to identify and classify study subjects when they returned to a field office to complete licensure.

Data collection at the DMV field offices was accomplished through the use of a DMV Delegated Drive Test Subject Log Sheet (see Appendix A). When a study subject returned to a DPE field office to complete licensing requirements, the office personnel were to identify them as a study participant by the code written on their driver training completion certificate by the driving schools. Subjects tested by the driving schools could also be identified when they presented a Certificate of Driving Skill (DL 336) form showing that they had completed a delegated test. This form was required to be presented to DMV within 5 working days of the drive test to prevent the subject from receiving too much additional practice in case he or she was selected to take a DMV retest. For each subject identified as a study participant, the field offices were to record the instruction permit number, group assignment code (indicating whether the subject took a delegated test, was to be given a first-attempt DMV drive test, or was to be given a mandatory DMV retest), and date of the field office contact. If the applicant was to be retested or given a first-attempt DMV drive test, the field offices were also to record the DMV examiner number, DPE test score, and whether or not the test was postponed. Every tenth line on the DMV subject log was shaded, indicating that if a school-test subject was entered on that line, he or she was to be immediately retested by DMV. The field office DPE score sheets for retested subjects were to be sent to DMV Headquarters on a weekly basis, along with the completed subject logs. It was decided to discontinue field office data collection altogether in August 1998 and to instead rely on the driving school subject logs to identify the majority of the study subjects. However, school-test subjects who were retested by DMV still had to be identified from the DMV logs that were collected up to that point.

Comparisons of Test Results and Driver Records

Scoring consistency between driving school and DMV examiners. Scoring consistency between the driving schools and DMV was evaluated by comparing the internal-consistency reliabilities computed from the driving school and field office DPE score sheets, and also by comparing the test-retest results of applicants tested by the driving schools and subsequently retested by DMV. The internal-consistency reliabilities of the school and field office DPEs were computed using the Kuder-Richardson (K-R 20) formula. In general, this type of reliability indicates the degree of uniformity among test items and the extent to which the test items measure a common domain of knowledge or skill. It also gauges the overall precision of the test as a measurement instrument. In this particular case, the internal-consistency reliability indicates the extent to which items on the DPE measure the same dimensions of driving competency. A multidimensional test will tend to have lower internal-consistency than will one that has fewer factors, all else being equal. A test that is highly reliable should result in very similar scores across repeated testings of the same people (assuming a fixed skill level

between test administrations). The reliability coefficient can range from 0 to 1, where a value of 0 indicates no similarity between the test items and a value of 1 denotes that the items are perfectly homogenous. In general, coefficients closer to 1 are more desirable.

The Fisher transformed *Z* test for independent correlations was used to determine the statistical significance of differences between the school and DMV DPE internal-consistency reliabilities. Because the DPE was used by both the driving schools and DMV field offices, the driving school and field office DPEs should have about the same level of factorial complexity. Therefore, it would be expected that the internal-consistency reliabilities of the school and DMV DPEs would be similar if their examiners closely followed the DPE scoring criteria.

The McNemar chi square (χ^2) test for related samples was used to determine the statistical significance of the difference in the pass/fail classifications made by the driving school and DMV examiners for subjects tested by the driving schools who were subsequently retested by a DMV field office. Driving school and DMV examiners should be similar in their pass/fail classifications of these subjects if both rigorously followed the DPE scoring criteria.

Traffic safety comparisons. Three different sets of traffic safety analyses were conducted. The purpose of the first set was to determine if simply offering the delegated test to one group and not the other had an effect on traffic safety. This was accomplished by comparing the 6-month post-licensure accident and citation rates for all subjects with an odd instruction permit number (all qualifying school test applicants) and those having an even instruction permit number (all applicants who did not qualify for a school test). A difference between the accident or citation rates for these groups would suggest that the delegated-test offer had an impact on traffic safety. The second set of analyses compared the 6-month post-licensure accident and citation rates for all subjects who were tested by the driving schools (excluding retest subjects) and those tested at DMV. The purpose of this analysis was to evaluate the effect of delegated testing itself on traffic safety. The third set of analyses checked for self-selection bias by comparing subjects who were eligible for a school test but chose a DMV test and applicants who were required to be tested by DMV. Because these groups received the same drive test treatment, a difference between the groups would supply evidence that self-selection bias had confounded the accident and citation rates for the DMV-test and school-test groups, and consequently biased the results from the second set of analyses mentioned above.

Analysis of covariance (ANCOVA) was used to determine the statistical significance of differences in the accident and citation rates for the various study groups. This technique statistically adjusted the criterion measures (accident and citation rates) for a number of demographic and driving locality variables in order to remove extraneous variation in the accident and citation rates associated with these variables (covariates).

An alpha level of .10 was used for the Fisher transformed *Z* tests, the McNemar chi square test, and all ANCOVAs to determine the statistical significance of any group differences. This means that a difference between the groups is considered to be "true" if its likelihood of occurrence by chance alone (p) is less than 10 times out of 100. All

analyses were conducted using two-tailed significance tests to investigate differences in either direction.

RESULTS

The collection of data was ceased at the end of June 1998 to allow enough time for screening and analyzing the data and writing this report. All data collected prior to the June 1996 modification of the study design had to be discarded because they were based on the original subject-assignment methodology that changed 6 months after the pilot began. Therefore, all results presented in this portion of the report are based on only 2 years (June 1996 through June 1998) of the 3-year pilot program.

Data Screening

The subject logs and DPE score sheets collected from the driving schools and DMV field offices during June 1996 to June 1998 were coded and screened by Research and Development. Numerous errors in data reporting were identified through this process, but attempts to improve data reporting were not successful. The department's Data Entry section entered data from the logs and score sheets into electronic files. Research and Development electronically screened these files for errors and then merged them into a number of working data files. It was determined during this process that the field offices erroneously forwarded a large number of DPE score sheets for study subjects who were administered first-attempt DMV drive tests. Although these forms could potentially represent a biased sample of DMV-test applicants, they were used to compute the internal-consistency reliability of the DPE for first-attempt DMV-test applicants, which was compared to the internal-consistency of tests given by the schools.

The instruction permit numbers recorded on the driving school logs were matched to the department's Driver License Masterfile (DLM) to obtain the licensing history, birth date, driver license application date, and driver license issue date for each subject. The ages of the applicants at the time they were either trained or tested by the driving schools was computed from the birth dates on the DLM and the training or testing dates indicated on the driving school logs. Subjects were removed from the data pool if the learner's permit number was invalid (i.e., did not match to the DLM), they were too old (over 18 years) or too young (under 15 years) at the time of training to be included in the study, or they were already licensed when they were trained by the schools. A total of 26,920 valid cases remained after this process was completed.

Identification of Test Groups

Subjects were identified as having been tested by a driving school if they had a drive test score and valid examiner number on the school log and/or a school DPE score sheet had been submitted for them. All other subjects were deemed to have not been given a school test and therefore were either tested by DMV or had not taken a drive test within the period of the study. This screening process yielded 6,216 subjects in the school-test group and 20,704 subjects in the DMV-test group. However, seven of the school-test cases were removed because they had an even terminal-digit and should

therefore not have been school tested, which reduced the school-test total to 6,209 subjects.

The previously noted data reporting problems made it impossible to identify all school-test subjects who were retested by DMV. In an attempt to identify true retest cases, subjects shown on the field office logs as being mandatory retest subjects were matched to the school-test subjects on the school logs. If a match occurred and the field office log entry included both a valid DMV examiner number and a DMV drive test result, the applicant was certified as a retest subject. The process yielded a total of 214 retest cases for use in the analysis of test-retest scoring consistency.

Projected and Actual Subject Volumes

The number of study subjects was much lower than projected during the planning of the pilot program. It was originally believed that the schools would test their annual allotment of 15,000 provisional applicants, of which 1,500 would be selected for a retest each year. It was also expected that there would be about 22,500 DMV-test subjects available each year. These projected sample sizes were determined through power analyses to be the minimum volumes necessary to be fairly certain that the statistical analyses could detect the smallest effect of interest, which was a 5% difference in accident and citation rates for the traffic safety analyses (power = .68, two-tailed), and a two percentage-point difference in fail rates for the scoring consistency analysis (power = .99, two-tailed). Based on the projections, it was expected that 30,000 school-test subjects (3,000 of whom were to be retested by DMV) and 45,000 DMV-test subjects would be available over the 2-year pilot period used for this portion of the report. However, the obtained subject volumes are much lower than projected, as illustrated in Figure 1.

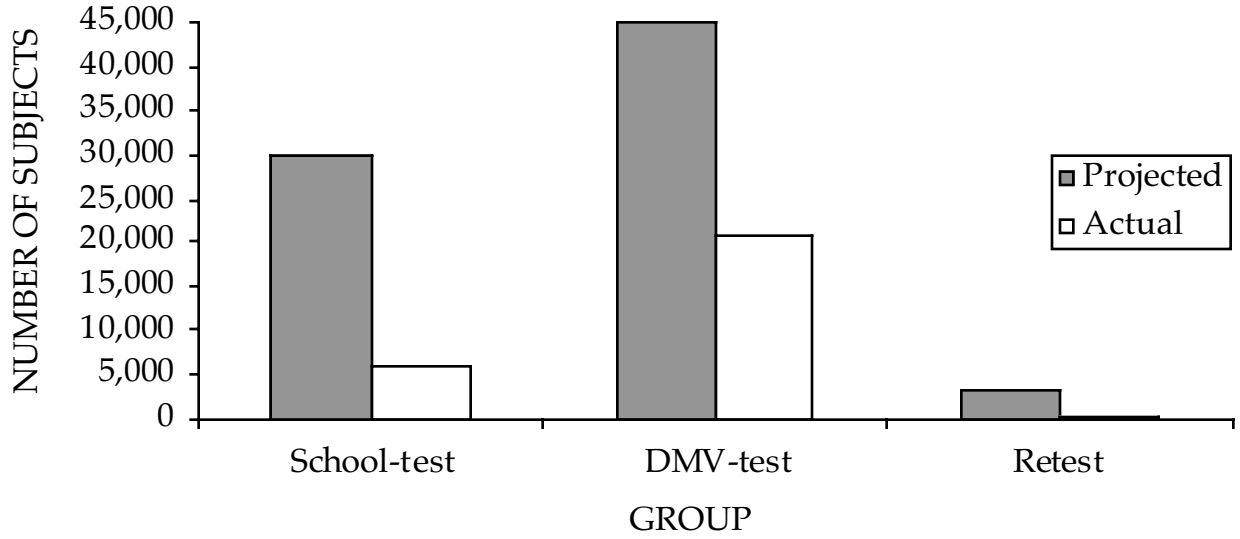

Figure 1. Projected and actual 2-year subject volumes.

Because the actual subject volumes are very small, it is unlikely that differences of the sizes mentioned above could be detected, even if such differences truly do exist. A post hoc power analysis indicates that a true 5% difference in the accident rates would only be identified 21% of the time by the statistical analyses with these subject volumes. Because of this low statistical power and the other study limitations discussed earlier, accurate conclusions about the degree of scoring consistency and the impact of the program on traffic safety cannot be drawn based on the analyses presented within this report.

Test Failure Rates

The number of subjects, test failure rate, and percentage of applicants who failed because they made a Critical Driving Error (CDE) are presented in Table 1 for applicants taking a first-attempt driving school or DMV drive test. The DMV field office figures are based only on the 2,800 nonretest subjects who had a DPE score recorded on the field office subject logs.

Table 1

Number of Subjects Tested, Failure Rate, and Percentage of Applicants Failing Due to Critical Driving Error (CDE)

Group	Number of subjects	% failing	% failing due to CDE
School-test	6,209	7.4	6.5
DMV-test	2,800	16.8	15.4

As can be seen in the table, the driving schools appear to have failed a much smaller percentage of school-trained provisional applicants than did DMV. The majority of driving school and DMV subjects who failed did so because they committed one or more CDEs, which should result in automatic disqualification. Note, however, that the figures presented for the DMV-test group are based on less than 15% of the 20,704 total DMV subjects, primarily due to the previously mentioned data reporting problems. Therefore, the DMV fail rate presented in the table may not accurately portray the true DMV subject fail rate.

Scoring Consistency Between Driving School and DMV Examiners

Internal-consistency reliability. The internal-consistency reliabilities of the driving school and DMV DPE score sheets were computed using the Kuder-Richardson (K-R 20) formula. Two sets of K-R 20 reliabilities were computed: one set based on a subset of tests that included a freeway component, and another set based on all DPEs after deleting the freeway items. Because almost none of the available field office DPE score sheets were administered with a freeway component, the reliability coefficient for the field office DPE with the freeway items had to be estimated from the non-freeway items using the Spearman-Brown Prophecy formula. (The Spearman-Brown Prophecy

formula estimates what the reliability of the test would be if the number of items was increased by a given proportion.) Score sheets for applicants who failed by CDE were excluded from the K-R 20 calculations because these applicants were automatically disqualified and consequently did not complete all of the drive test maneuvers.

The internal-consistency coefficient for the driving school DPE was .49 (n = 1,627) with the freeway items included and also .49 (n = 4,234) with the freeway items deleted. The coefficient for the field office DPE was .66 (n = 392) with the freeway items included and .64 (n = 392) without the freeway items. Results of Fisher transformed Z tests for independent correlations indicate that the difference between the school and field office DPE reliabilities was statistically significant with the freeway items included (Z = 4.55, p < .001, two-tailed) and also with the freeway items excluded (Z = 4.19, p < .001, two-tailed). These reliability coefficient values, while generally considered to be poor for unidimensional tests, are more acceptable in this case because of the multidimensional nature of the DPE. If the observed differences between the driving school and field office DPE reliabilities are not biased in some way by the potentially unrepresentative DMV sample, then the lower reliabilities found for the driving school test indicate that the school examiners were less diligent in following the DPE scoring criteria than were the DMV examiners.

Test-retest comparisons. The test results for the 214 subjects who were tested by the driving schools and subsequently retested by DMV are presented in Table 2.

Table 2

Number and Percentage of Total Subjects Passing and Failing the School Test and DMV Retest

	DMV retest result	
School test result	Pass	Fail
Pass	169 (79.0%)	33 (15.4%)
Fail	9 (4.2%)	3 (1.4%)

Note. The pass/fail outcomes are significantly different for the school test and DMV retest, $\chi^2(1, N = 214) = 12.60$, $p < .001$, two-tailed.

The McNemar chi square (χ^2) test for related samples was used to determine the statistical significance of the difference in the pass/fail classifications made by the driving school and DMV examiners. The results indicate the difference is statistically significant, χ^2 (1, N = 214) = 12.60, p < .001, two-tailed. Although the driving school and DMV examiners reached the same decision for 80.4% of the applicants, in 15.4% of the cases the DMV examiners failed the subjects after the driving schools passed them, and in 4.2% of the cases the subjects passed the DMV test after having failed the school test.

It was not surprising to find that DMV passed some subjects who had failed at the driving schools, because the subjects could have received additional driving practice in-between the two tests. However, if the pattern demonstrated by this small and potentially biased sample of applicants is reflective of the entire school-test population, it suggests that the driving schools passed many provisional applicants who would not have passed at DMV.

Traffic Safety Analyses

Criterion period. To evaluate the safety impact of the program it was originally planned to compare the DMV and driving school test groups (excluding retest subjects) on accident and citation rates during the 2 years subsequent to drive test date. Because the test date was missing for the majority of subjects, it was decided to instead use the date that licensing was completed for each applicant, which was obtained from the department's DLM.

Subjects. The license issue date on the DLM did not reflect the date of original licensure for applicants who had upgraded their license class or who had renewed or added a license endorsement since the time they were issued their Class C noncommercial license. Of the 20,704 DMV-test and 5,995 nonretest school-test subjects, 2 subjects (both DMV-test) were removed because they had changed their license class since they received their original license, and 205 subjects (153 DMV-test and 52 school-test) were removed because they had either renewed or added an additional license endorsement since their Class C noncommercial license was issued. In addition, a total of 3,100 subjects (2,970 DMV-test and 130 school-test) had to be excluded from the traffic safety analyses because they had not completed licensure as of the DLM extract on October 19, 1998. Because cases were classified as school-test or DMV-test subjects based on whether or not they showed evidence of a school test on the driving school subject logs, any subjects who had not taken a road test during the study period were assigned to the DMV-test group. Hence, it is not surprising that a larger proportion of the DMV-test group were unlicensed than was the case for the school-test group. This was expected because all subjects who took a school test would have already met all other requirements for licensure.

Less than half of the subjects had at least 1 year of post-licensure driving history. It was therefore decided to use 6 months post-licensure as the criterion period so that the majority of subjects could be included in the analyses. There were 5,510 (4,360 DMV-test and 1,150 school-test) applicants who had completed licensure but still had to be excluded from the analyses because they had less than 6 months of post-licensure driving. The entire screening process resulted in 17,882 (13,219 DMV-test and 4,663 school-test) subjects for the traffic safety analyses. The number and percentage of subjects excluded from the analyses for various reasons are presented in Table 3.

Table 3

Number and Percentage of Applicants in the School and DMV Groups Excluded from the Traffic Safety Analyses for Various Reasons

Group	Starting number	Reason for removal				Total removed	Total remaining
		License not Class C non-commercial	Renewed or added license endorsement	Not yet licensed	Licensed less than 6 months		
School-test (odd DL#)	5,995 (100%)	0 (0.00%)	52 (0.87%)	130 (2.17%)	1,150 (19.18%)	1,332 (22.22%)	4,663 (77.78%)
DMV-test (even DL#)	11,985 (100%)	2 (0.02%)	102 (0.85%)	1,555 (12.97%)	2,444 (20.39%)	4,103 (34.23%)	7,882 (65.77%)
DMV-test (odd DL#)	8,719 (100%)	0 (0.00%)	51 (0.58%)	1,415 (16.23%)	1,916 (21.97%)	3,382 (38.79%)	5,337 (61.21%)
Total	26,699 (100%)	2 (0.01%)	205 (0.77%)	3,100 (11.61%)	5,510 (20.64%)	8,817 (33.02%)	17,882 (66.98%)

As can be seen in the table, proportionally more DMV-test subjects than school-test subjects had to be excluded from the analyses. In particular, almost 7-times more DMV-test subjects than school-test subjects were excluded because they had not completed licensure. As mentioned earlier, this is mostly due to the fact that subjects opting for the school test would in all other respects have been ready for licensure. It can also be determined from the table that the driving schools administered a delegated test to about 40% (5,995) of the 14,714 applicants on the school logs who were eligible to have taken one. (This number greatly overestimates the percentage of eligible provisional license applicants in Southern California who were tested by the schools, because the driving schools were permitted to test all provisional applicants in the region, not just those trained by the pilot schools. The percentage of total eligible provisional applicants in the Southern California population who were tested during the 2-year pilot is estimated to be less than 10%.)

The 6-month post-licensure accident and citation rates for the 17,882 usable subjects were extracted from the DLM on October 26, 1998. Eleven records (10 DMV-test and 1 school-test) were not available at the time of the extract, so these subjects were dropped from the analyses. The driving records for the remaining 17,871 subjects were used in the traffic safety comparisons.

Selection of covariates. A pool of 19 demographic and driving-locality (census and Zip Code) variables were chosen for potential use as covariates in the traffic safety analyses. Descriptions of these variables are given in Appendix B. The 11 census variables were those recommended by DeYoung (1993) for predicting accident risk. The six Zip Code variables consisted of the 1997 3-year accident and citation rates per driver by Zip Code of residence. (These rates are generated yearly by DMV.) For 11 cases these rates were not available for the subject's Zip Code, so the average of all the other Zip Code accident and citation rates were used instead for these subjects.

A two-step process was used to select which of the 19 variables to use as covariates for each criterion measure. In the first step, bivariate Pearson product-moment correlations between each of the variables and each of the criterion measures were used to select a preliminary pool of covariates. All variables that correlated significantly ($p < .05$, two-tailed) with the 6-month post-licensure accident measure were initially selected as candidate covariates for the accident criterion measure. Similarly, all variables that correlated significantly with the 6-month post-licensure citation measure were selected as candidate covariates for the citation criterion measure. In the second step, the candidate covariates for each criterion measure were used in a backwards-elimination linear regression. At each step of this process, variables were removed from the regression model if doing so resulted in less than a 0.10 reduction in the F statistic. Any variables that were not removed in this process were used as covariates in the ANCOVA for that criterion measure. This process resulted in five covariates for the accident criterion measure (Zip Code total accident and citation rates, average travel time to work, percentage with an elementary education, and percentage Black), and 10 covariates for the citation criterion measure (gender, average age at licensure, Zip Code injury accident and citation rates, percentage with a high school education, percentage Black, percentage Hispanic, percentage renting, percentage driving alone to work, and median family income). Table 4 presents the group means of the final covariates for the three sets of driver record comparisons.

Table 4

Covariate Group Means by Comparison Category

	Comparison and group					
	Comparison I		Comparison II		Comparison III	
Covariate	Odd digit-school test offered	Even digit-DMV test required	School test	DMV test	Odd digit-DMV test	Even digit-DMV test
Gender (% male)	52.08	52.20	53.14	51.77	51.19	52.20
Average age at licensure	16.61	16.59	16.60	16.60	16.61	16.59
Zip Code total accidents per 100 drivers	4.94	4.92	4.93	4.93	4.94	4.92
Zip Code injury accidents per 100 drivers	1.21	1.20	1.21	1.20	1.20	1.20
Zip Code total citations per 100 drivers	18.18	18.15	18.09	18.20	18.27	18.14
Zip Code % Black	5.67	5.75	5.02	5.95	6.24	5.75
Zip Code % Hispanic	21.86	21.07	22.58	21.14	21.24	21.07
Zip Code % elementary education only	8.44	8.15	8.46	8.26	8.43	8.15
Zip Code % high school education only	20.53	20.35	20.42	20.46	20.62	20.35
Zip Code % renting	39.62	39.16	39.34	39.44	39.86	39.16
Zip Code % drive alone to work	77.81	78.09	77.82	77.98	77.80	78.09
Zip Code average travel time to work (min.)	28.79	28.94	28.58	28.95	28.97	28.94
Zip Code median family income ($)	51,436	52,530	51,159	52,186	51,678	52,530

Note. The final covariates for the accident criterion measure were Zip Code total accident and citation rates, % elementary education, % Black, and average travel time to work. The final covariates for the citation criterion measure were gender, average age at licensure, Zip Code personal injury accident and citation rates, % high school education, % Black, % Hispanic, % renting, % driving alone to work, and median family income.

The unadjusted and covariate-adjusted 6-month post-licensure accident and citation rates are presented in Table 5 for each set of driver record comparisons. The citation means include convictions, failures to appear in court or pay fines, and traffic violator school citation-dismissals.

Table 5

Unadjusted and Covariate-Adjusted 6-Month Post-Licensure Accident and Citation Rates (per 100 Drivers) by Group Comparison Category

Comparison Group	*N*	6-month post-licensure accidents		6-month post-licensure citations	
		Unadjusted	Adjusted	Unadjusted	Adjusted
Comparison I					
Odd digit (school-test offered)	9,993	8.28	8.27	10.69	10.71
Even digit (DMV test required)	7,878	8.58	8.59	10.79	10.76
Comparison II					
School-test	4,662	8.71	8.68	10.83	10.88
DMV-test	13,209	8.30	8.31	10.70	10.68
Comparison III					
Odd digit-DMV test	5,331	7.90	7.90	10.56	10.57
Even digit-DMV test	7,878	8.58	8.58	10.79	10.78

Note. No statistically significant differences ($p < .10$, two-tailed) were found between the covariate-adjusted accident or citation rates for the groups in any of the comparisons.

Note that only small differences exist between the unadjusted and covariate-adjusted means in the table, which suggests that the degree of bias on these covariates was negligible. However, it is very likely that other important factors such as driving exposure (miles driven) and the conditions of driving are not fully accounted for by the covariates, and hence still represent sources of potential bias in the traffic safety comparisons. In addition, most of the covariates employed in the study were aggregate-level variables for the applicant's Zip Code and, as such, may provide very imprecise measures of a given individual's status on specific variables such as socioeconomic status and actual number of miles driven.

Comparison I: School-test offer versus no offer. The covariate-adjusted 6-month post-licensure accident and citation rates for subjects who qualified to take a delegated test (odd instruction permit number) and for subjects who did not qualify (even instruction permit number) were compared to determine if offering the delegated test to one group and not the other had an effect on traffic safety. Because the group offered the test included drivers who accepted the offer, any difference between these two groups

would also reflect any effect of delegated testing itself. It should also be noted that this analysis was expected to be free of selection bias because assignment to the groups (based on instruction permit number) was a randomized process. The results of these analyses are summarized in Table 6.

Table 6

Summary of ANCOVA Results: School-Test Eligible Versus Noneligible

Source of variation	*df*	*MS*	*F*	*p*
		6-month post-licensure accidents		
Covariates	5	1.420	16.72	.000
Group	1	0.046	0.54	.461
Residual	17,864	0.085		
		6-month post-licensure citations		
Covariates	10	3.449	24.81	.000
Group	1	0.001	0.01	.929
Residual	17,859	0.139		

Note. No statistically significant differences ($p < .10$, two-tailed) were found between the accident or citation rates for the groups.

The results of these analyses do not indicate a significant difference between the covariate-adjusted 6-month post-licensure accident rates ($p = .46$) or citation rates ($p = .93$) for the two groups. However, the low statistical power of the analyses precludes drawing a definitive conclusion from these results regarding the effects of the delegated test offer or exposure to the delegated testing program.

Comparison II: School-test versus DMV-test. The covariate-adjusted 6-month post-licensure accident and citation rates for subjects given a school drive test and subjects given a DMV drive test were compared to determine if the delegated drive test pilot program had an impact on traffic safety. The results of these analyses are summarized in Table 7.

The results of the analyses did not indicate a statistically significant difference between the covariate-adjusted 6-month post-licensure accident rates ($p = .46$) or citation rates ($p = .76$) for subjects tested by the driving schools and subjects who elected or were required to take a drive test at DMV. However, the low statistical power of the analyses once again worked against finding a significant program effect.

Table 7

Summary of ANCOVA Results: School-Test Versus DMV-Test

Source of variation	*df*	*MS*	*F*	*p*
		6-month post-licensure accidents		
Covariates	5	1.420	16.72	.000
Group	1	0.047	0.56	.456
Residual	17,864	0.085		
		6-month post-licensure citations		
Covariates	10	3.449	24.81	.000
Group	1	0.013	0.09	.759
Residual	17,859	0.139		

Note. No statistically significant differences ($p < .10$, two-tailed) were found between the accident or citation rates for the groups.

Comparison III: Evaluation of self-selection bias. This final set of analyses checked for self-selection bias by comparing the covariate-adjusted 6-month post-licensure accident and citation rates for subjects who were eligible for a school test but chose a DMV test and subjects who were required to be tested by DMV. Because these groups received the same drive test treatment, the only difference between them is that the subjects in one group chose to be tested by DMV while those in the other were required to be tested by DMV. Significant differences between the accident or citation rates for the two groups would suggest that drivers who chose a school test were better (or worse) drivers than those who did not, regardless of any effect the program may have had. This outcome would indicate that any effect (or lack of effect) that may have been detected in the previous analysis could have actually been a result of self-selection bias. The results of the analyses are summarized in Table 8. (The adjusted and unadjusted rates can be found in Table 5.)

Table 8

Summary of ANCOVA Results: Comparison of Subjects Eligible for a School Test Who Chose a DMV Test with Subjects Required to Take a DMV Test

Source of variation	*df*	*MS*	*F*	*p*
		6-month post-licensure accidents		
Covariates	5	1.083	12.76	.000
Group	1	0.150	1.76	.184
Residual	13,202	0.085		
		6-month post-licensure citations		
Covariates	10	2.355	17.19	.000
Group	1	0.014	0.10	.753
Residual	13,197	0.137		

Note. No statistically significant differences ($p < .10$, two-tailed) were found between the accident or citation rates for the groups.

The results of the analyses did not indicate a statistically significant difference between the covariate-adjusted 6-month post-licensure accident rates ($p = .18$) or citation rates ($p = .75$) of subjects who were eligible for a school test but chose a DMV test and subjects who were required to be tested by DMV. However, the trend in the accident rate comparison suggests that school-test subjects had higher accident expectancies than school-test eligible subjects who chose to be tested at DMV. Because the trend exists even after the means were adjusted for several covariates thought to mediate self-selection bias, these results suggest that if a true bias did exist, it most likely favored the DMV-test group. As noted earlier, one potential bias was miles driven, which was not available as a covariate in this study.

DISCUSSION

The present study found no evidence of a difference between the 6-month post-licensure accident or citation rates of provisional applicants administered a drive test by the pilot driving schools and applicants administered a drive test by DMV. However, no accurate conclusions can be made from these findings because of the limitations and potential uncontrolled-for biases present in the study. Therefore it cannot be concluded with confidence that the finding of no statistically significant difference between the groups on the criterion measures represents the actual impact of delegated testing on traffic safety. Conversely, if a difference had been found in the accident or citation rates, the potential biases (including the suggestion of self-selection bias favoring the DMV-test group) would mitigate against drawing strong inferences from the results.

The lower reliability of the driving school test and the results of the test-retest analysis suggest that the driving school examiners followed the DPE scoring criteria less rigorously than did the DMV examiners. The school examiners were far more lenient, having passed many applicants who subsequently failed the drive test at DMV. Although this finding also requires qualification, it is unlikely that differences of the magnitude observed can be totally attributed to bias.

The ambiguity of the study results emphasizes the need in program evaluations for rigorous experimental methodology that allows causal inferences to be made from the study results. Perhaps most important for a valid study is that the subjects be randomly assigned to the treatment groups. Although the original design of this evaluation met this requirement, the modifications made to accommodate operational exigencies required the adoption of a less rigorous quasi-experimental design. It is also critical that the number of subjects in each treatment group be large enough to provide an adequate level of statistical power. Although the number of subjects in this study might be large enough to yield high statistical power in some applications, the extremely rare and stochastic nature of traffic accidents requires much larger sample sizes to achieve an adequate level of statistical power. Finally, a good measure of

driving exposure is also important for discerning between differences in accident rates related to the program and those simply due to differences in miles driven.
The failure to reach the projected subject volumes was partially due to the driving schools being able to recruit only a very small proportion of eligible provisional applicants to take a school-administered test. The low volume of school tests given indicates that there may not be a sizable market for privatizing the drive test, at least under the program constraints imposed by the legislation and departmental regulations. In addition, the fact that so few driving schools chose to participate in the program implies a lack of interest in privatizing the drive test by the driver training industry itself.

Another factor that may have dampened the popularity of the program was the increased total cost to the provisional applicants who chose a school test. Any money the applicants paid to be tested by the driving schools would have been in addition to the $12 application fee they were still required to pay DMV, which would ordinarily have permitted them to take up to three drive tests at DMV. As such, there was no obvious financial incentive for applicants to take a school test. Any incentives that did exist, such as not needing to have a registered and insured vehicle for testing, apparently did not outweigh the financial expense of taking a school test for the vast majority of eligible applicants. The fact that school-test applicants had to go to DMV to complete their licensing transactions anyway eliminated any substantial time-saving advantage of taking a test at the schools.

RECOMMENDATIONS

It is recommended that the program of privatization as reflected in this study not be considered for statewide implementation. No clear benefits could be identified, particularly when considered in conjunction with the increased cost to the licensee.

If statutes are subsequently enacted to further explore this concept, they need to be written in a way that allows rigorous evaluation of the program as noted earlier. It is also essential that any future policy analysis and evaluation of privatizing the road test capture data on the comparative cost of private versus government-provided testing. The model evaluated pursuant to Senate Bill 1390, Calderon (CH. 699, Stats. 1994), is particularly problematic from a cost/efficiency standpoint because of the need to maintain two separate systems (private and DMV). It is difficult to envision how such a requirement would result in reduced cost to the public, and the potential for tangible benefits commensurate with the increased cost are not promising.

REFERENCES

DeYoung, D. (1993). *Reduced set of 1990 census variables* (Internal memorandum to research analysts and managers, December 3). Sacramento: California Department of Motor Vehicles.

Hagge, R. A. (1995). *Evaluation of California's special drive test program*. (Report No. 160). Sacramento: California Department of Motor Vehicles.

Romanowicz, P .A., & Hagge, R. A. (1995). *Evaluation of the validity of California's driving performance evaluation road test*. (Report No. 154). Sacramento: California Department of Motor Vehicles.

APPENDIX A

Subject Log Sheets

STATE OF CALIFORNIA
DMV
DEPARTMENT OF MOTOR VEHICLES

DELEGATED DRIVE TEST SUBJECT LOG SHEET — DMV

FIELD OFFICE NAME	ID NUMBER	DRIVER LICENSE WINDOW NUMBER

DRIVER LICENSE NUMBER	ASSIGNMENT				LICENSING REGISTRATION EXAMINER #	TEST POSTPONED? (✓ IF YES)	TEST RESULT (# ERRORS, DQ,MF)
	DMV (✓ if code=D)	School (✓ if code=S)	Preselected retest (✓ if code=SR)	Today's date (mmddyy)			

STATE OF CALIFORNIA
DMV
DEPARTMENT OF MOTOR VEHICLES

DELEGATED DRIVE TEST SUBJECT LOG SHEET

DRIVING SCHOOL (NAME)	ID #
CONTACT PERSON (NAME)	PHONE #
EXAMINERS (EXAMINER 1 MANE)	EXAMINERS (EXAMINER 2 MANE)

DRIVER LICENSE NUMBER	NAME	TRAINED BY SCHOOL (✓ IF YES)	TODAY'S DATE (MMDDYY)	DRIVER TRAINING COMPLETION DATE (MMDDYY)	TEST DATE (MMDDYY)	EXAMINER (1 OR 2)	TEST RESULT (DQ, MF, OR SCORE)	DMV RETEST? (✓ IF YES)

NOTE: Driver training entries are to be made immediately upon completion of training. Delegated drie test entries are to be made immediately upon completion of the drive test.

Completed log sheets are to be sent weekly to:
DMV Research and Development Section MS-F126
Delegated Testing Stuidy, P.O. Box 932382
Sacramento, CA 94232-3820

APPENDIX B

Descriptions of Variables Considered for Inclusion
as Covariates in Statistical Models

Type/name	Description
Demographic	
Sex	Sex of subject
Agelicn	Age of subject at licensure
Census	
Unemp	Percent unemployed in subject's Zip Code
Hisp	Percent Hispanic in subject's Zip Code
Element	Percent of all adults with elementary education in subject's Zip Code
Age55	Percent age 55 or older in subject's Zip Code
High	Percent of all adults with a high school diploma in subject's Zip Code
Medfamin	Median family income in subject's Zip Code
Meantrvl	Mean travel time to work in subject's Zip Code
Black	Percent Black in subject's Zip Code
Renter	Percent renting in subject's Zip Code
Drivealon	Percent of adults who drive alone to work in subject's Zip Code
Onpa	Percent of adults receiving public assistance in subject's Zip Code
Zip Code	
Piacc	Average number of injury accidents per driver in subject's Zip Code
Allacc	Average number of total accidents per driver in subject's Zip Code
Majconv	Average number of major convictions per driver in subject's Zip Code
Moviol	Average number of moving violations per driver in subject's Zip Code
Allconv	Average number of total convictions per driver in subject's Zip Code
Fatacc	Average number of fatal accidents per driver in subject's Zip Code